

SPECIFICATION AMENDMENTS

Replace the paragraph beginning at page 1, line 7 with:

The present invention relates to a photomask, a flare measuring mechanism, a flare measuring method, and an exposing method. More specifically, the present invention relates to a photomask used for measuring flare caused by ~~the~~ aberration of ~~the~~ projection lens in an exposing apparatus used in a process for manufacturing a semiconductor device; and a flare measuring mechanism, a flare measuring method, and an exposing method using such a photomask.

Replace the paragraph beginning at page 1, line 24 with:

During developing, however, flare may be caused by fine irregularity of the projection lens ~~that penetrate~~ penetrated by the exposing light, or by scattered light. Flare may deteriorate the contrast of the exposing light that plays an important role in the formation of element patterns to lower the exposing margin in the exposure of the fine patterns, or to bring about the deterioration of the shapes of fine patterns.

Replace the paragraph beginning at page 2, line 4 with:

Fig. 16 is a sectional view for illustrating a conventional photomask used for measuring flare; Fig. 17 is a top view thereof; and ~~Fig. 18 is a~~ Figs. 18A – 18C are schematic top ~~view~~ views showing the change of the shape of the transferred resist pattern when exposure is changed in the exposure using the conventional photomask.

Replace the paragraph beginning at page 2, line 9 with:

In general, for the calculation of the flare rate, a method for calculating the flare rate defined by the Kirk method (box-in-box method) is used. The measurement of the flare rate by the Kirk method will be described below referring to Figs. 16 to ~~48~~ 18C.

Replace the paragraph beginning at page 3, line 14 with:

In other words, in the Kirk method, flare is defined as the percentage of the exposure dosage when the photoresist corresponding to the open portion 306 is ~~removed~~ removed,

adequately leaving the photoresist corresponding to the light-shielding regions 304 and 308, to the exposure when all the photoresist pattern corresponding to the central light-shielding portion 304 is removed. This is defined utilizing the phenomenon that the larger the flare of the projection lens ~~installed on~~ in the exposing apparatus, the easier the resist pattern of the central light-shielding portion 304 on the center of the mask layout.

Replace the paragraph beginning at page 4, line 13 with:

Concurrent with the miniaturization of patterns, exposing light of shorter wavelength has been used, and the use of an F₂ excimer laser as exposing light is taken into account. When an F₂ laser is used, a conventional projection lens consisting of quartz (SiO₂) cannot provide sufficient transmittance. Therefore, the use of the projection lens using fluorite (CaF₂) can be considered. However, the projection lens consisting of fluorite (CaF₂) has large non-uniformity of refraction index due to double refraction, and large roughness of the lens surface. Therefore, if fluorite (CaF₂) is used as the material of the projection lens, more flare occurs as compared with the conventional lens consisting of quartz (SiO₂). The flare is divided into several components according to causes, and becomes complicated. Therefore, ~~the~~ accurate measurement of flare by the Kirk method has become ~~further~~ still more difficult.

Replace the paragraph beginning at page 4, line 27 with:

However, as the wavelength of the exposing light becomes shorter, the region affected by local flare becomes smaller, but the intensity of local flare is considered to increase. Therefore, it is considered that the effect of the use of shorter wavelength on the line width of the transferred pattern becomes too ~~larger~~ large to ignore. It is therefore important to correctly know the effect of local flare.

Replace the paragraph beginning at page 8, line 20 with

~~Fig.~~ Figs. 18A to 18C ~~is a~~ are schematic top ~~view~~ views showing the change of the shape of the transferred resist pattern when exposure is changed ~~in the exposure~~ using the conventional photomask.